Environmental Management Systems

This plan describes how the Environmental Management System (EMS) works at the Ames Laboratory.

Comments and questions regarding this plan should be directed to the contact person below:

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SIGN-OFF RECORD:

Reviewed by: _____ Date: _____
Environment, Safety, Health & Assurance, Manager

Approved by: _____ Date: _____
Ames Laboratory, Deputy Director

Approved by: _____ Date: _____
Ames Laboratory, Director

1.0 DIRECTOR'S STATEMENT

Ames Laboratory has a strong commitment to the safety and health of each Laboratory employee. The Laboratory is equally committed to preventing accidental loss of resources and assets and protecting the environment and the general public. It is my belief that accidents that cause injury, illness, property loss or damage to the environment are preventable. Therefore, it is our goal to eliminate foreseeable hazards and maintain a safe and healthful workplace. In addition, achieving compliance with applicable Department of Energy Orders and regulatory standards is a prerequisite for doing Laboratory business and the responsibility of each employee.

In order to accomplish these goals, the Laboratory has adopted the principles of Integrated Safety Management or ISM. Basically, ISM means that we must incorporate safety into all aspects of our work, from planning to completion. We must have total participation by line management and all employees. Each level of supervision at the Laboratory has the responsibility to lead by personal example and to provide the opportunity and the conditions for adequate performance of safety practices. All employees are required to comply with the Laboratory's Environment, Safety, Health and Assurance Program. This "team" effort is necessary to achieve a safe and productive research laboratory.

Dr. T. J Barton, Director
Ames Laboratory

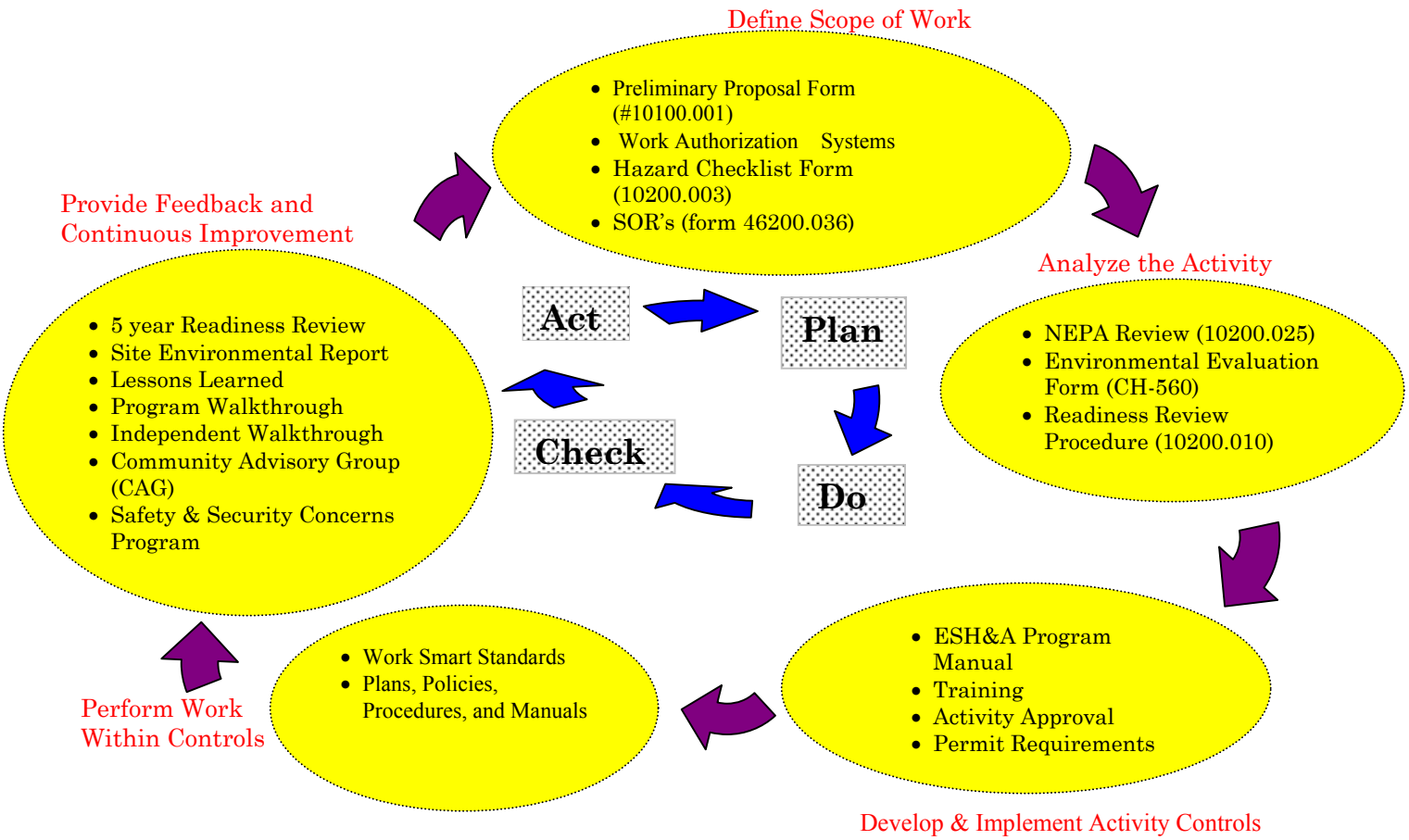
2.0 CORE ELEMENTS

1) Environmental Protection
Consists of maintaining air permits, water quality and EPA/DOE reporting. See Appendix A for a detailed description.

2) Waste Management
Consists of training, collection and management of hazardous waste. RCRA waste is disposed of every 90 days or less. TSCA waste is limited to asbestos and PCB ballasts and is typically disposed of once a year. Health physics personnel characterize radiological waste. Radiological waste is disposed of annually. See Appendix A for a detailed description.

3) Waste Minimization/Pollution Prevention
The Laboratory strives to eliminate mercury, form the Laboratory. The Ames Lab Store Room stocks only non-mercury thermometers. ESH&A staff reviews requisitions for non-mercury thermometers and toxic chemicals. Unused chemicals are redistributed when possible. Scrap metal, computer equipment and white paper are sent off site for recycling. See Appendix A for a detailed description.

3.0 ENVIRONMENTAL PROTECTION



3.1 Define Scope of Work

a) Funding for new activities at the beginning of the fiscal year go through the Work Authorization System (WAS). The WAS is a comprehensive document describing research proposals. Other research activities (new or significantly modified) must submit a Preliminary Proposal Form (#10100.001) and an ES&H Hazard Identification Checklist (form # 10200.003). Forms are to be completed by the principle investigator for the activity and routed to ESH&A for review. The Service Order Requisition (SOR) is used by Ames Laboratory Facility Services to define scopes of work and is reviewed by ESH&A.

3.2 Analyze the Activity

a) Activities are tracked and evaluated by using the National Environmental Policy Act Plan (#10200.025) and the NEPA Compliance Guide, Volumes I & II, August 1998 for significant environmental impacts. An environmental evaluation form (CH-560) is completed by the Environmental Specialist and sent to DOE Chicago Operations Office for review and tracking. A determination or classification is made in collaboration with the DOE Chicago Operations Office on whether the activity

requires further evaluation (EA and/or EIS) or is excluded from further NEPA review.

b) Once an activity has been reviewed and funded, the activity supervisor and safety officer must go through a formal Readiness Review Procedure (#10200.010) before developmental approval is awarded for the activity. The activity will go through formal review with all parties involved (i.e. ESH&A Specialist, Occupational Medicine, Facility Services and Engineering Services). Environmental issues/concerns as well as other issues are addressed and discussed, depending on the nature of the activity.

c) The Laboratory has plans, policies and procedures (internal and external) for specific activities and functions. External are Laboratory wide and internal are those utilized by ESH&A personnel.

3.3 Develop & Implement Activity Controls

a) The ESH&A Program Manual (#10200.002) is a tool for all Ames Laboratory employees to use. The manual is a guide to ESH&A plans, policies and procedures. Employees are always encouraged to contact the ESH&A department for guidance.

b) ESH&A's Training Office tracks employee training. Specific training is determined when an individual becomes an employee by filling out the Training Needs Questionnaire with their supervisor.

Note: New employees are required to sign-up for GET upon checking in at the Human Resources Office.

c) Approval for the activity is granted after all issues stemming from the activities Readiness Review process has been adequately addressed.

3.4 Perform Work Within Controls

Federal/State regulations, DOE Orders and Ames Laboratory Plans, Policies and Procedures control how the Laboratory operates with respect to the environment, safety and health of employees and general public.

a) The Laboratory's Work Smart Standards (WSS) are incorporated in the Labs contract with the Department of Energy. WSS include Federal, State, Executive Orders and DOE orders. For a list of the WSS go to http://www.external.ameslab.gov/esha/Worksmartstd/WorkSmart.html.

b) Plans, Policies, Procedures and Manuals are utilized to help employee's perform activities within regulatory standards. For a list of these documents go to http://www.external.ameslab.gov/esha/ESH&A_Documents/documents.html.

3.5 Provide Feedback and Continuous Improvement

a) A five year Readiness Review (# 10200.010) is used to review ongoing activities.

b) Site Environmental Report (SER) is an annual report that recaps the calendar year for Ames Laboratory's Environmental Program. The report also contains a comment page for recipients of the report to respond to the report. Go to http://www.external.ameslab.gov/esha/ESH&A_Documents/reportlist.html for a list of SER's.

c) Lessons learned are a way to communicate occurrences not only from Ames Laboratory activities but also throughout the DOE complex. Personnel can benefit by learning from other occurrences throughout the complex. Lessons learned can by viewed at http://www.external.ameslab.gov/esha/.

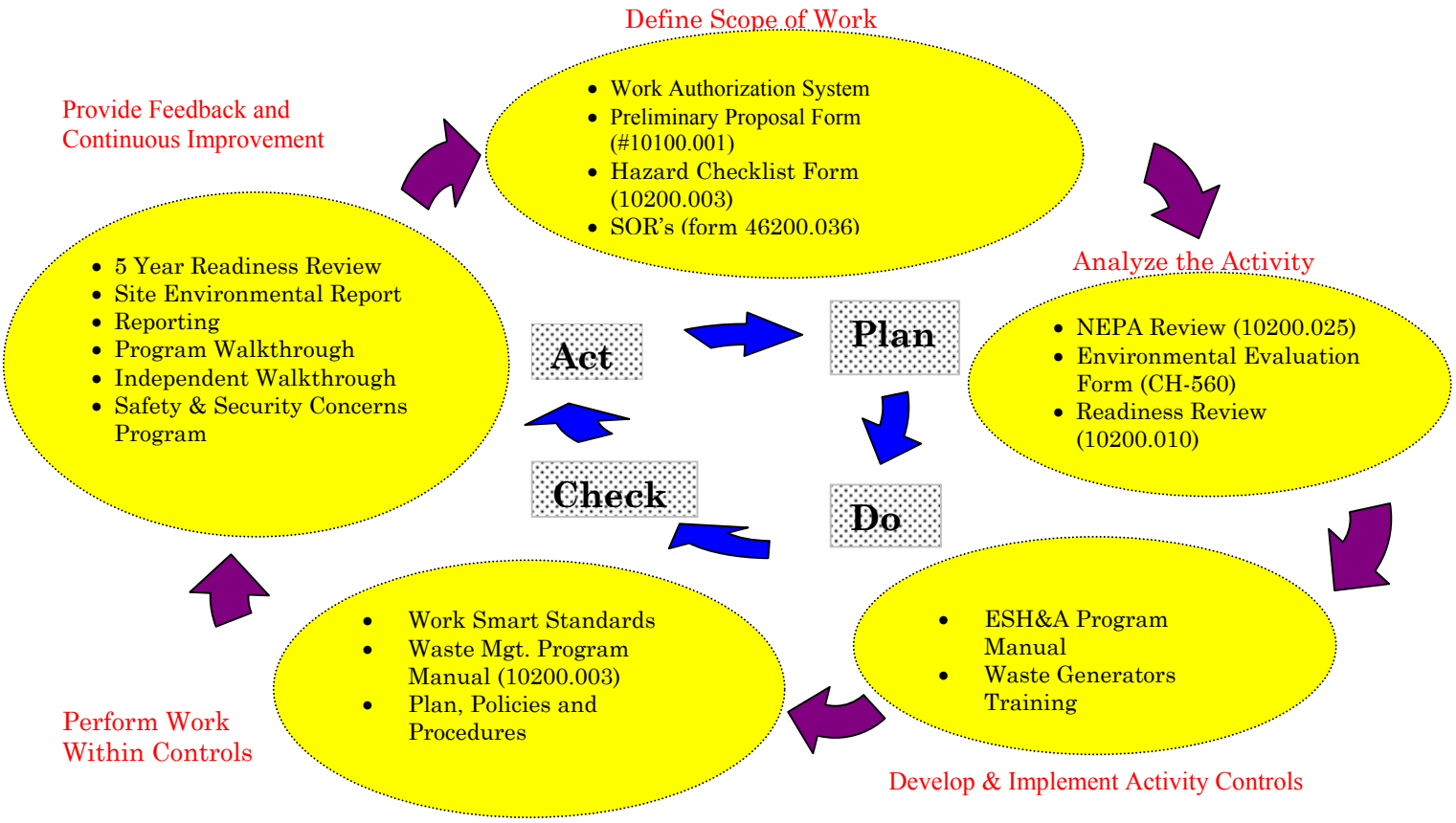
d) Independent Walkthroughs (#10200.21a) are performed monthly, in designated laboratory, office and facility spaces. The Environmental Specialist looks for non-compliance issues during the walkthrough. Deficiencies are recorded and tracked in the Laboratory's Corrective Action Database and are to be corrected in a timely manor depending on the severity.

e) The Program Director and Safety Coordinator perform Program Walkthroughs (#10200.014). Deficiencies should be recorded and corrected amongst the Program.

f) The community advisory group (CAG) is a way for the Laboratory to communicate Laboratory activities that may have an impact on the community.

g) The Employee Safety and Security Concerns Program (#10200.038) is the primary purpose of investigating accidents and concerns is to determine the cause of accidents and/or prevent accidents from happening all together. Corrective actions can be determined in either case to prevent accidents, spills, and or release from happening.

4.0 WASTE MANAGEMENT



4.1 Define Scope of Work

a) Before an activity is developed it must follow the Work Authorization System (WAS) or a Preliminary Proposal Form shall be completed and routed to ESH&A staff for review. The proposal form provides a description of the proposed activity. The activity can be evaluated for potential waste generation activities. The Service Order Requisition (SOR) is used by Ames Laboratory Facility Services to define scopes of work and is reviewed by ESH&A.

a) A hazard checklist is required to accompany the preliminary proposal. The checklist should be filled-out by the primary investigator. All potential hazards should be checked. The checklist will further add the ESH&A staff in evaluating waste issues and other potential hazards involved with the proposed activity.

4.2 Analyze the Activity

a) The newly proposed activity is reviewed under the National Environmental Policy Act (See Ames Laboratory Plan #10200.025) and NEPA Compliance Guides I & II, August 1998. The NEPA review will determine whether further action or review is needed before the activity can be come developmental. It should be determined at this point that if waste is going to be generated from the activity that there is a disposal outlet for

the waste. **For wastes that have no disposal outlet, the Chicago Operations Office must grant advanced approval for activities generating this type of waste.**

b) The NEPA evaluation form is filled-out and signed by the Ames Laboratory NEPA officer and contractor/project manager of the proposed activity. The evaluation form is sent to DOE-CH for review and concurrence with the Laboratory's NEPA officer's evaluation.

c) Readiness Review (RR) Procedure (#10200.010): After a project has been through the NEPA review it must go through a RR. The RR is a formal review with Laboratory staff. Any waste management issues can be addressed at this point.

4.3 Develop & Implement Activity Controls

a) The ESH&A Program Manual (#10200.002) is a tool for all Ames Laboratory employees to use. The manual is a guide to ESH&A plans, policies and procedures. Employees are always encouraged to contact the ESH&A department for guidance.

b) Waste Management Program Manual (#10200.003). This manual is for employees that generate any hazardous waste and/or low-level waste and/or mixed waste. The plan deals with the proper collection and storage of these wastes. It is essential that the procedures and policies outlined in the plan be followed.

c) Waste generator training (AL-073). Employees working with chemicals are required to take this training module. This training will give them an overview on how to properly manage their waste. Rad Worker II training (AL-077) is required for employees working with radioactive materials.

4.4 Perform Work Within Controls

Work Smart Standards and Ames Lab Plans, Policies and Procedures control how the Laboratory operates with respect to the environment safety and health of employees and the general public.

a) The Laboratory's Work Smart Standards (WSS) are incorporated in the Labs contract with the Department of Energy. WSS include Federal, State, Executive Orders and DOE orders. The Laboratory must comply with these WSS. For a list of the WSS that apply to waste management go to: http://www.external.ameslab.gov/esha/Worksmartstd/WorkSmart.html

b) Plans, Policies and Procedures are utilized to help employee's perform activities within regulatory standards.

c) Waste Management Program Manual (#10200.003). This manual contains the policies and procedures for the Laboratory. Employees are to follow these in order to maintain regulatory and institutional compliance.

4.5 Provide Feedback and Continuous Improvement

a) A five year Readiness Review (# 10200.010) is used to review ongoing activities. Types of waste and volumes can be reviewed at this time.

b) Site Environmental Report is an annual report that recaps the calendar year for Ames Laboratory's Environmental Program. The report is distributed to DOE-CH and EPA Region VII as well as other agencies and offices. Waste volumes and waste types are reported for each calendar year.

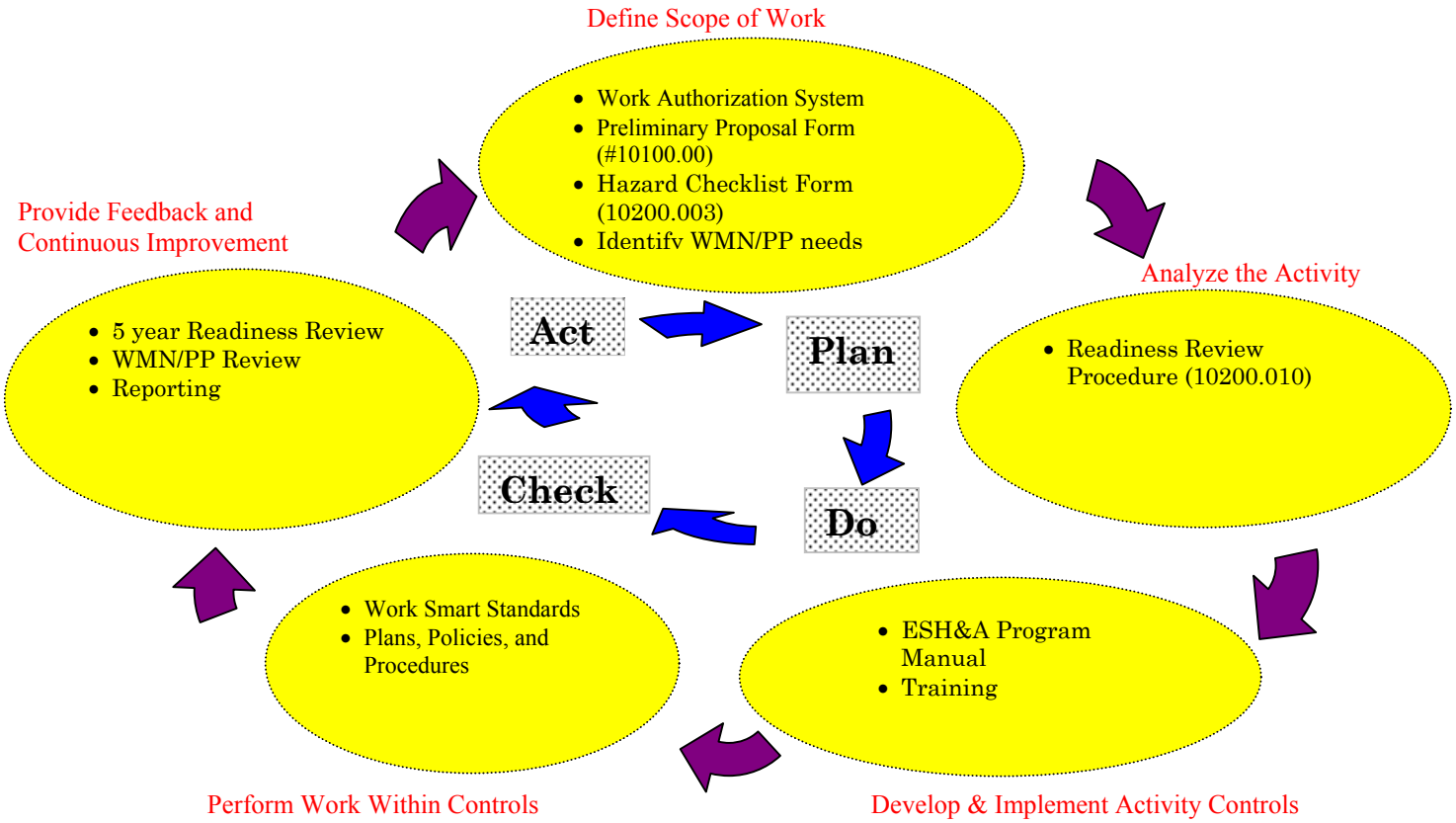
c) Reporting. The Laboratory reports its annual waste generation to the DOE via web-based program. These numbers are published in the DOE's Annual Report of Waste Generation and Pollution Prevention Progress. The Laboratory also files a Biennial report with EPA Region VII every March 1st of the reporting year.

d) Independent Walkthrough Procedure (#10200.021a). Walkthroughs are performed monthly, in designated laboratory, office and facility spaces. The Environmental Specialist looks for non-compliance issues during the walkthrough. Deficiencies are recorded and tracked in the Laboratory's Corrective Action Database and are to be corrected in a timely manor depending on the severity.

e) The Program Director and Safety Coordinator perform Program Walkthroughs (#10200.014). Deficiencies should be recorded and corrected amongst the Program.

h) Employee Safety and Security Concerns Program (#10200.038). The primary purpose of investigating accidents and concerns is to determine the cause of accidents and/or prevent accidents from happening all together. Corrective actions can be determined in either case to prevent accidents, spills, and or release from happening.

5.0 WASTE MINIMIZATION/POLLUTION PREVENTION



5.1 Define Scope of Work

a) Activities can be evaluated for waste minimization/pollution prevention (WMN/PP) practices through the Work Authorization System or Preliminary Proposal Forms.

b) A hazard checklist is required to accompany the preliminary proposal. The checklist should be filled-out by the primary investigator. All potential hazards should be checked. The checklist will further add the ESH&A staff in evaluating WMN/PP practices.

c) Identify WMN/PP needs. The environmental specialist will identify areas of WMN/PP as appropriate.

5.2 Analyze the Activity

a) Readiness Review (RR) Procedure (#10200.010). The RR is a formal review with Laboratory staff. Any WMN/PP issues can be addressed at this point and implemented.

b) The ESH&A Program Manual (#10200.002) is a tool for all Ames Laboratory employees to use. The manual is a guide to ESH&A plans, policies and procedures. As always employees are encouraged to contact the ESH&A department for guidance.

c) Waste generator training (AL-073). Employees working with chemicals are required to take this training module. Training includes guidance on using alternative (non-regulated) substances and segregating materials to minimize waste streams and references the Laboratory's WMN/PP Plan (#10200.023) for other ways to minimize their waste.

5.3 Perform Work Within Controls

a) The Laboratory's Work Smart Standards (WSS) are incorporated in the Labs contract with the Department of Energy. WSS include Federal, State, Executive Orders and DOE orders. The Laboratory must comply with these WSS. For a list of the WSS that apply to waste minimization/pollution prevention go to: http://www.external.ameslab.gov/esha/Worksmartstd/WorkSmart.html.

b) Ames Laboratory has developed and implemented a Waste Minimization/Pollution Prevention Plan (#10200.023).

c) Purchase requisitions for virgin toner cartridges are reviewed by the environmental specialist for justification. Recycled cartridges are purchased when feasible.

5.4 Provide Feedback and Continuous Improvement

a) A five year Readiness Review (# 10200.010) is used to review ongoing activities. WM/PP efforts are evaluated or implemented upon review as applicable.

b) The WMPP Plan is reviewed every three years.

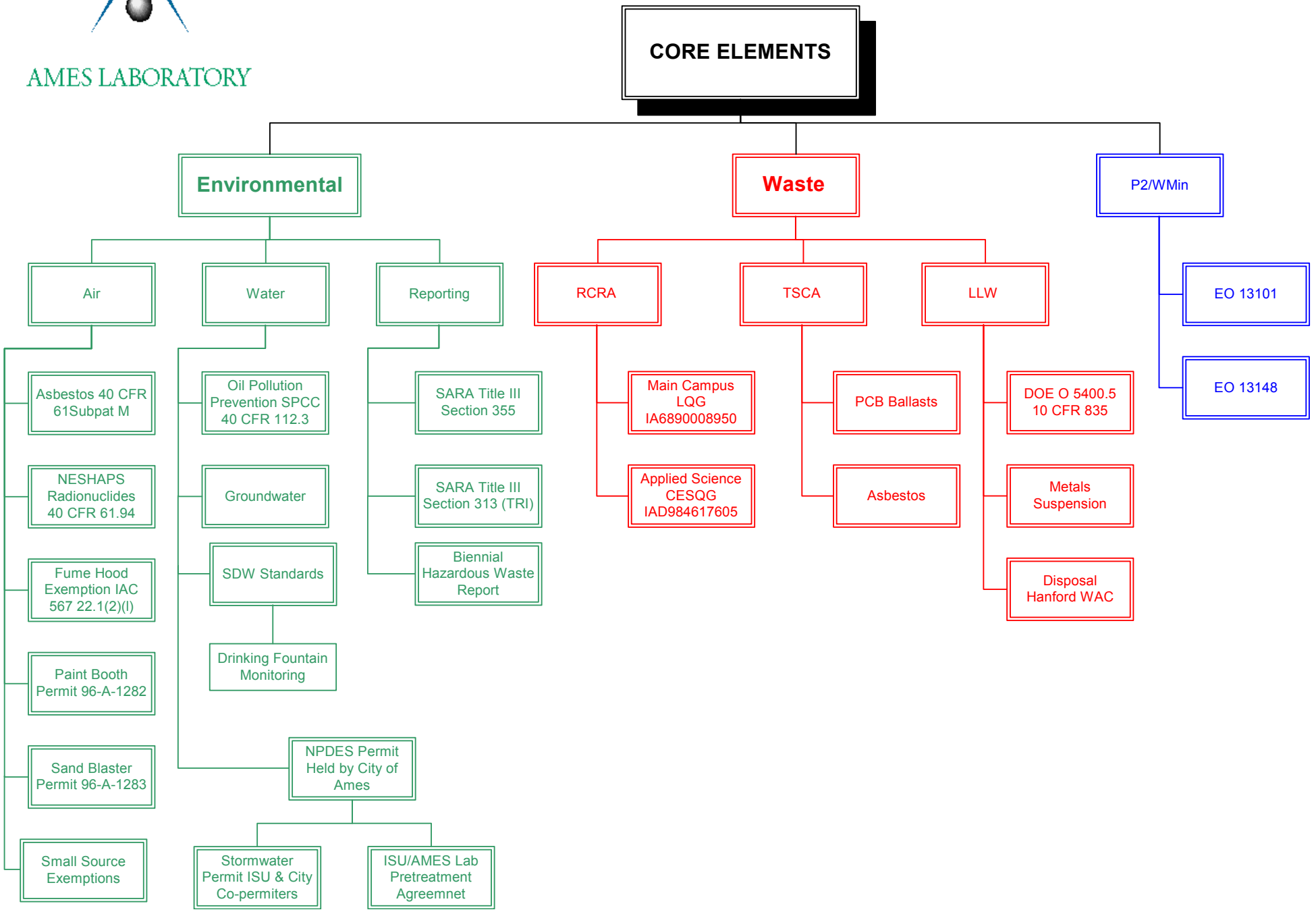
c) Reporting. The Laboratory reports its annual pollution prevention progress to the DOE via web-based program. These numbers are published in the DOE's Annual Report for Waste Generation and Pollution Prevention Progress.

APPENDIX A

- Environmental Management Systems Flow Chart (Core Elements)

AMES LABORATORY

ENVIRONMENTAL MANAGEMENT SYSTEM



ENVIRONMENTAL

I. Environmental - Air

A. Asbestos Notification 40 CFR 61 Subpart M
Notification is sent to State of Iowa's Air Bureau Division of the Department of Natural Resources. Notification is sent for each planned job after threshold limits are meet.

B. NESHAPS
The COMPLY modeling program is utilized to determine the radioactive emissions from laboratory activities and storage per 40 CFR Part 61.94. For a current Radionuclide Air Emissions Report see the current Site Environmental Report at http://www.external.ameslab.gov/esha/ESH&A_Documents/reportlist.htmlLaboratory

C. Fume Hoods
Fume hoods are exempt from permitting under IAC 567, Chapter 22. See Current Ames Laboratory Site Environmental Report for copy of letter at http://www.external.ameslab.gov/esha/ESH&A_Documents/reportlist.html

D. Paint Booth Permit
The paint booth is utilized by the Facility Service Personnel for small furniture and equipment repair. The paint booth is permitted by the Iowa Department of Natural Resources (IDNR) (Permit #96-A-1282). A log of activity is maintained by Facility Services. The permit can be viewed in G40 TASF.

E. Sand Blaster Permit
The sand blaster is utilized by Facility Services Personnel for small furniture and equipment repair. The sand blaster is permitted by the IDNR (Permit #96-A-1283). A log of activity is maintained by Facility Services. The permit can be viewed in G40 TASF.

F. Small Source Exemptions
1) Back-up generator: The Laboratory's diesel back-up generator is exempt from permitting under IAC 567 Chapter 22..1(2). The back-up generator tank capacity is less than 10,570 gallons and an annual throughput of less than 40,000 gallons.
2) Graphite lathe: Used infrequently for special order work. See exemption letter in the current Site Environmental Report at http://www.external.ameslab.gov/esha/ESH&A_Documents/reportlist.html
3) Graphics paint booth: The graphics paint booth is used to exhaust cans of spray adhesives and paints. See exemption letter in the current Site Environmental Report at http://www.external.ameslab.gov/esha/ESH&A_Documents/reportlist.html

II. Environmental - Water

A. Spill Prevention Control and Countermeasure (SPCC) Plans
The Laboratory doesn't meet the 1320-gallon (40 CR Part 112) threshold for oil storage. Therefore the Laboratory isn't required to have a SPCC plan. The Laboratory has taken measures to prevent oil from reaching navigable waters, in the event of a spill (e.g. spill control materials are placed throughout the Laboratory).

B. Groundwater Monitoring
Currently there is no groundwater monitoring being performed. The Laboratory does not have any UST's or activities that could contaminate the groundwater.

C. Safe Drinking Water Act
Drinking water standards are meet by the City of Ames. Drinking fountains are monitored, following procedure #46300.009, annually for lead by Ames Laboratory Facility Services.

D. National Pollutant Discharge Elimination Systems (NPDES)
Neither Ames Laboratory nor Iowa State University (ISU), the contractor, holds a NPDES permit per 40 CFR Part 122. The City of Ames holds this permit.

1) ISU has a pre-treatment agreement with the City of Ames under permit numbers 3593-4 (main campus) and 3593-5 (applied science complex). Both the City and ISU monitor discharge locations.
2) ISU and the City of Ames are acting as co-permiters for their Storm Water Phase II requirement. Ames Laboratory does not own the land or roads on or around its buildings.

III. Environmental - Reporting

A. SARA Title III section 355, "Emergency Planning and Notification"
The Laboratory is exempt from reporting under 40 CFR Part 370 section 311(e)(iv). The Laboratory doesn't store or use chemicals listed in Appendix A of 40 CFR Part 355 at or above the threshold planning quantities (TPQ).

B SARA Title III, Section 313, "Toxic Release Inventory".

Research activities at the Laboratory are conducted at "bench top" scale. Even with lower threshold levels for "Persistent Bioaccumulative Toxic (PBT) Chemicals" (i.e. Mercury), the Laboratory doesn't exceed the PBT thresholds. Mercury is the only PBT chemical that is used. However, mercury is used in parts per million (PPM), in a few research activities. At these levels the Laboratory doesn't exceed the 10-pound threshold for mercury.

B. Biennial Hazardous Waste Report
The "Hazardous Waste Report" is submitted to EPA Region VII in accordance with 40 CFR 262 subpart D and 40 CFR 264 & 265 subpart E.

WASTE

I. Waste – Resource Conservation Recovery Act (RCRA)

Ames Laboratory is registered with the Environmental Protection Agency (EPA) Region VII as a hazardous waste generator. The Laboratory currently has two active EPA identification numbers.

A. Main Campus

Department of Energy buildings located on ISU's main campus is managed as a large quantity generator under IA6 890 008950. Waste is picked-up by Ames Laboratory ESH&A personnel and put into the Laboratory's 90 day storage area. Here the waste is segregated and assigned a unique number for tracking purposes.

1) A contingency plan (#10200.017), as required by 40 CFR 265.52, is in place and is updated annually. The plan also outlines training requirements.
2) Waste is packaged and shipped every 90 days or less by a contracted hazardous waste vendor.

B. Waste Handling Facility (WHF)

The WHF is located at the ISU's Applied Science Complex. The Laboratory retains beneficial use of the facility. Its primary use is for staging and packaging low-level waste. A CESQG identification number (IAD 984 617 605) currently exists for this location. A letter was sent to EPA Region VII on October 16, 2002 requesting the termination of this EPA ID Number as no further RCRA waste activities are planned.

II. Waste - Toxic Substance Control Act (TSCA)

The Laboratory is limited to polychlorinated biphenyls (PCBs) ballasts and asbestos containing material (ACM).

A. PCB ballasts are generated due to renovation projects and ballast replacement due to failure. Ballasts are disposed of through the Laboratory's hazardous waste vendor.

B. Asbestos containing material is generated through renovation and maintenance projects. ACM is disposed of at the local landfill.

III. Waste – Low Level Radioactive Waste (LLW)

There are two types of radioactive waste at the Ames Laboratory. 1) Low Level Waste generated from renovation projects due to legacy contamination. Contaminated materials generated from renovation projects are disposed at an approved DOE facility. 2) As items in the Laboratory's material balance become of no use they are declared waste and are disposed at an approved DOE facility. Currently there are no projects or activities at the Laboratory that are routinely generating radioactive waste.

A. DOE Order 5400.5 and 10 CFR Part 835 are used as guidance for handling radioactive waste.

B. Metals Recycling Suspension, July 13, 2000. On this date a moratorium on scrap metal, from DOE facilities, going to recyclers was set into place. The moratorium suspends any metals, coming out of radioactive areas, from being sent for recycling.

Contaminated metals generated at the Ames Laboratory are minimal. Metal items that are contaminated and are restricted from being recycled are sent to Hanford, WA as LLW where they are disposed.

C. Hanford Waste Acceptance Criteria.
The most current Hanford Solid Waste Acceptance Criteria (HNF-EP-0063, Revision 7) is used as guidance for preparing radioactive waste shipments destined to Hanford. A Hanford representative conducts an onsite visual inspection of the packing of radioactive waste containers prior to shipping to Hanford, WA.

POLLUTION PREVENTION/WASTE MINIMIZATION (P2/Wmin)

I. Executive Orders (EO)

The following EO's are in the Ames Laboratory Work Smart Standards.

A. Executive Order 13101, Greening the Government Through Waste Prevention, Recycling and Federal Acquisition, was issued to improve Federal use of recycled products and environmentally preferable products. Affirmative procurement is in the Laboratory's contract as a performance measure and is reported to DOE-CH through the Laboratory's self-assessment report. Pollution prevention, affirmative procurement and waste minimization efforts are also reported to DOE-HQ through a web based data collection system.

B. Executive Order 13148, Greening the Government Through Leadership in Environmental Management, requires Federal Facilities to institute Environmental Management Systems (EMS). The Laboratory is in the process of formalizing an EMS. This EO also mandates Federal Facilities to follow the reporting requirements under Emergency Planning and Right-to-Know Act (sections 301-303, 304, 311-312, 313). Due to the Laboratory's "bench-top" scale research no threshold quantities are met, therefore the Laboratory has not needed to report to EPA under EPCRA. The Laboratory does maintain memorandums of understanding (MOU) with the Iowa State Department of Pubic Safety and the City of Ames Fire Department. Copies of MOU's are located in the "Ames Laboratory Emergency Plan".